1.	**Course title**	Distributed Systems
2.	**Course code**	F18L3W064
3.	**Semester**	7
4.	**Unit offering the course**	Faculty of Computer Science and Engineering
5.	**ECTS**	6
6.	**Goals of the study programme**	
	This course covers the development of middleware systems. The subject covers the principles that underline the development of distributed systems, more specifically communications, processing, naming, consistency and replication, fault tolerance and security. These principles are furthermore analysed in their usage in distributed web based systems, distributed object based systems, distributed file systems and distributed coordination based system.	
7.	**Contents of the study programme**	
	Introduction to distributed systems. Multiprocessors vs network systems. Architectures for interconnection. Models on services. JSON, Google protocol buffers. RPC, distributed objects, web services. Group communication. Ordered and reliable communication. Election algorithms. Distributed mutual exclusion. Replication and virtual synchronization. Consensus. Distributed transactions. Two/Three phase execution. Concurrency control. Distributed deadlock. Network file systems. Distributed and parallel file systems. Naming and binding. DNS. Multicast DNS. Distributed lookup and hash tables. Content delivery networks. Peer-to-peer systems. Distributed caching. Security in distributed systems. Design of distributed systems.	